BALANCING ECONOMIC CONSIDERATIONS IN SUSTAINABILITY OF AGRICULTURE

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Before discussing the economic considerations in sustainability of agriculture, I must tell you that I am not an economist by any stretch of the imagination. Having exposed what some of you may view as an asset, others a liability, it is important that I clearly identify the intent of my presentation. Since I am not an economist, you can be assured that I will not be throwing economic jargon at you. For what it is worth, "elasticity" to me means how far a rubber band will stretch and return to its original shape. What I would like to accomplish today is to focus your attention on the various dimensions of economics as they relate to the kinds of policy decisions important to the sustainability of agriculture.

I consider myself a generalist and as such can provide a broader perspective on issues critical to informed policy assessment and decision making on the future of our country's food and fiber production system. I recognize that economic considerations are not the only factors on which policy is to be developed and implemented, but rather that the answers lie in a process of balancing complementing, competing and conflicting goals.

Current and forthcoming public policy debates and discussions are important because of their potential impact on the future of agriculture. After all, we are tinkering with one of our basic needs of human survival, our supply of food and fiber, and also an important asset to the economic well-being of our country. Therefore, it is essential that we welcome policy debates as a constructive means for exploring the varied options available to us and fostering informed policy decisions that enable us to improve upon the enviable production capacity of today's agriculture. I compliment the National Public Policy Education Committee and Farm Foundation for sponsoring this National Public Policy Education Conference that provides us this important opportunity for interaction and discussions on agricultural policy.

Defining Sustainable Agriculture

There are no general categories or easy definitions for sustainable agriculture, nor is it possible to use a broad paint brush to generically

classify certain approaches or philosophical views on agriculture as being "sustainable," or for that matter "conventional." In order for discussions on sustainable agriculture to be positive and constructive, a realistic perspective on exactly what is meant by the term "sustainable agriculture" is essential. The many meetings which have been held recently on low-input sustainable agriculture (LISA), alternative agriculture, regenerative agriculture, organic agriculture, sustainable agriculture, etc., have helped form consensus on using the term "sustainable agriculture" around which future goals for agriculture should be crafted. However, our present situation is more appropriately described as "being in search of sustainability," more in definition than perhaps reality. This lack of definition for sustainable agriculture is a serious obstacle if we are to provide realistic goals and direction to the future of agriculture. It is hard for me to imagine that anyone would argue against knowing where we presently are relative to "sustainability," so that we can define strategies for getting there, if we are not already, and correct any deficiencies in our current production system and practices where needed. Yet there are some who argue that we should conduct this dialogue unchartered and open-ended, for reasons I do not understand. Perhaps I could agree with this thinking if it applies only to the approaches for getting to sustainability. It should not apply to defining sustainability in terms of goals which is our current and most challenging task.

Obviously, the policy decision-making process toward establishing goals will cause "change" in agriculture. In talking of "change," the point needs to be recognized that change, per se, is not new to agriculture as evidenced by the normal evolution of technology and practices during the last forty years which has brought us to our current enviable level of efficiency and productivity. There is a different "change," however, that has come on the scene. One resulting from greater interest and involvement on the part of the nonagricultural elements of society, i.e. the general public, in the way agriculture does business. This situation has come about primarily due to increased public awareness and concerns over the possible impacts of agriculture on the environment. The involvement can be characterized by expressed public expectations and demands for accountability in environmental performance.

Another call for "change" in agriculture is in response to the economic hardships experienced by agriculture during the early to mid-1980s. Advocates of LISA and alternative agriculture are using this era, in addition to environmental issues, as the justification for their perspective on agriculture's need to move away from reliance on off-farm inputs, primarily synthetic pesticides and fertilizers, and greater use of crop diversification. I will address the economic considerations of these arguments later in this paper, but before leaving this issue, it is important to point out that the economic downturn during the 80s was more the result of poor national monetary and fiscal policies, rather than the actual agricultural practices themselves. Furthermore, the economic

situation for farmers has been on the upswing for the past three to four years without changes to agricultural practices, just a better external economic environment.

Decisions on the way we raise food and fiber in the future cannot be based on emotion, unfounded statements or certain philosophical beliefs. Rather, it is important that goals, involving society collectively, be defined in search of, or assuring, sustainability in agriculture. I believe that a report prepared by the Council for Agricultural Science and Technology (CAST) provides a realistic perspective from which to define goals for agriculture. This report, titled *Long-Term Viability of U.S. Agriculture,* presents "long-term viability" of agriculture (sustainability) as having three distinct dimensions: (1) economic viability; (2) environmental and natural resources viability; and (3) social viability (Council for Agricultural Science and Technology).

Economic Dimensions

Looking more closely at the economic dimension of sustainable agriculture, one needs to consider the various levels of agricultural production. These being: (1) individual farms as production units; (2) national considerations relating to gross national product (GNP) and domestic food security; and (3) international considerations relating to our ability to compete effectively over the long term in the international market. Let us not forget that even though the economic interests of the individual farmers are and should be paramount, so are the economic consequences on society as a whole should we fail to adequately address all potential impacts of agricultural production policy decisions. These levels of U.S. agriculture are distinct with respect to the degree that the different dimensions of sustainability may apply, yet very much interrelated in the cause and effect category, especially in economic performance. We cannot lose sight that agriculture has made significant contributions to the U.S. economy, both in GNP and as one of the few assets in the U.S. international trade balance.

Much of the current public discussions on sustainable agriculture has focused on the farm level. The arguments being presented by proponents of LISA or alternative agriculture are toward making the farm unit more self-sufficient. From my observation, the goals here are more directed toward the sustainable dimensions of environmental and social viability, with inadequate attention to economic returns on crops produced in response to supply/demand pressures of the "external" markets, domestic and international. There is also a representation presented on behalf of farmers that they are or should be willing to accept a lower threshold of profitability in order to achieve agricultural harmony with nature. This man/environment relations goal is laudable, but approaches for achieving it also must be in harmony with goals of the other dimensions of sustainability.

As stated earlier, I am not presenting economic considerations as the sole dimension of sustainable agriculture. Indeed, environmental pro-

tection, wise use of natural resources, and social values are also important goals for agriculture. I believe these different dimensions can be brought into agriculture in a way that closely maximizes their respective goals. However, we cannot be so naive as to think that during this process of making and implementing policy, conflicts will not exist or trade-offs will not have to be made.

Productivity and efficiency are two measures of agriculture's economic viability. I imagine that well-defined economic definitions exist for both, but from my perspective I look at productivity as the measure of production output, whether it be on the scale of an acre, farm or national level. Efficiency, on the other hand, is the measure of economic performance of the farm as a production unit or the dynamic national production system. These measures, by themselves or together, do not assure long-term economic viability. Both are important indicators, but the availability and values of markets for the crops being produced are the overall factors in achieving economic viability. You can have productivity and production efficiency, yet end up with poor market returns due to market conditions.

Several production agriculture economic issues evolving around productivity and efficiency are worth mentioning in our assessment of future agricultural policy. Most basic are the size of farms and selection of crops. On the size of farms, a very important issue prevails in the current sustainable agriculture debate, that being maintaining small-sized farms. As we all know, the current trend in the size of U.S. farms is toward larger-scale farms with a noticeable loss of smaller farms. The demand for reversing this trend is coming from certain segments within our society driven more by the goals of preserving family farms (a social value) and a general claim of environmental benefit. These goals for smaller farms are based more on noneconomic dimensions of sustainable agriculture, at least in relation to the long-term viability of U.S. domestic and international markets. There is also a definite bias by the proponents of smaller farms against "big," which, in my opinion, is not warranted. Policy should not specify size of farms. That should be left to farmers and the use of economies of scale in our free enterprise system. As environmental performance becomes more of a societal "seal of approval" for agriculture, then the issue should really be whether a farm can meet its environmental responsibilities in the way it conducts business. There should not be an arbitrary assumption that "big" is bad, "small" is good. Since there are obvious productivity and efficiency disadvantages that smaller farms face in contrast to larger farms, a likely policy question is the need for maintaining small family farms through government support, should society decide this traditional value warrants the cost.

Crop selection presents a different perspective on productivity and efficiency. It recognizes, as I said earlier, that economic viability is not measured solely by productivity and production efficiency, but also the economic return on crop yields as dictated by market conditions. Simply put, a farm can choose to rotate crops or diversify crops for whatever reasons; however, the actual economic viability is ultimately determined,

short term and long term, by the amount of revenue generated by crops in the "external" market. If a farm cannot generate sufficient revenue to cover the cost of production plus earn a reasonable profit over the long haul, one can easily see that the farm is not economically viable and therefore not sustainable.

The same conclusions could also apply to agriculture on a national scale when commodity surpluses are created by an artificial market as a result of government subsidies. Of course, participating farms would receive revenue for producing the crop, but U.S. agriculture has created a negative return on the surplus portion of productivity and an uncertain economic viability for that commodity.

Efficiency plays an important role in farmers' selection of crops for production. Costs of producing crops raise interesting issues with respect to economic trade-offs between on-farm and off-farm inputs and different production costs in different cropping regions for the same crop. The issue of on-farm versus off-farm inputs, as you all know, is receiving much attention under LISA and alternative agriculture. I do not plan to get into any detail on this issue other than to say that efficiency in production agriculture is no different than efficiency in any production operation. The common objective being to minimize input costs, as much as feasible in efforts to maximize profit margins. Achieving efficiency requires that *all* production costs, fixed and variable, be fully accounted for and continually assessed for further reduction or elimination.

Industry's Role in Sustainability

I would like to focus now on the role of pesticides in sustainable agriculture. Based on current practices and technology, agricultural pesticides are an important *positive* factor in the economic dimension of a sustainable agriculture. For anyone to say otherwise is ignoring reality. There are obviously those who advocate the use of agricultural pesticides as being unneccesary, costly inputs, while at the same time playing on health emotions and fears of the public. Little credit is given to why farmers, based on *their* experience, use chemicals for the cost effective advantages in weed control and protection of crop yields from risks of loss to insects or disease.

Certainly, future technology will make significant advancements towards minimizing or eliminating pest risks in the first place. This will obviously have economic advantages for the farmer by reducing input costs for pest control strategies. However, when pest threats do exist, then the answer lies, from the aspects of sustainability, in controlling them in the most cost effective way. The key for guiding the selection of current and future pest control strategies (chemical or nonchemical), is in balancing cost effectiveness with environmental risks. The optimum being to *maximize* cost effectiveness and *minimize* environmental risks. Since agriculture is so diverse, applying this criterion will obviously require different levels of trade-offs according to locations and cropping systems and practices.

Achieving the maximum cost effectiveness and minimum environmental risks in the use of agricultural pesticides that is my industry's role and challenge in contributing to the sustainability of agriculture. In order to successfully achieve this role, however, individual companies, and the industry collectively, must be actively involved in the ongoing sustainable agricultural debate. In addition to being an active player, we must also become better informed on the complexities of the issues surrounding sustainable agriculture so that we can: (1) promote realistic perspective on the contributions of agricultural pesticides in sustainable agriculture; (2) foster and defend responsible use of agricultural pesticides; and (3) accept close public scrutiny and strict government requirements on pesticides, but demand the same ground rules for all forms of pest control strategies.

In order to maximize their cost effectiveness and minimize their risks, pesticides must be addressed on a product- and site-specific basis. To do otherwise would only mean sacrificing the quality of effective risk management strategies and the possible removal of pesticides as viable economic tools to agricultural producers in areas in which such action, in reality, is not warranted.

Providing pesticide users with the proper information to assure the safe and beneficial use of pesticides is the overall thrust of pesticide manufacturers' ever-increasing emphasis on product stewardship programs. Although currently driven mostly in response to environmental issues, these programs must also articulate the principles of prudent and judicious use of pesticides — to use pesticides only when needed, in amounts necessary to do what is intended, and in a manner that does not present unacceptable risk to health or the environment. The first two principles relate to maximizing cost effectiveness of pesticides, while the third principle addresses minimizing risk potentials, i.e. managing risks.

Conclusion

The agricultural chemicals industry is committed to its role and responsiblities in the sustainability of agriculture. We recognize that the varied goals involved are complex, yet achievable through informed decision making by society, with commitment and responsible action on the part of all.

A statement in a video program, "Ground Water and Agricultural Chemicals: Understanding the Issues," released by the American Soybean Association and the National Corn Growers Association, although specific to ground water, summarizes what needs to be done in our search for sustainability in agriculture. The statement is, "In balancing the parallel needs for protecting ground water and preserving agricultural productivity, it is important that the agricultural community recognizes that this is simply not a productivity issue. The millions of people that are served by the bounty of America's farms must recognize that it is simply not an environmental issue. The best interests of all

parties are served when ground water is aggressively protected and agricultural productivity is maintained."

REFERENCES

Council for Agricultural Science and Technology. *Long-Term Viability of U.S. Agriculture.* Washington DC: Rep. 114, June 1988.